REQUEST FOR RECONSIDERATION

The present invention relates to a soft magnetic green compact and a soft magnetic powder material. The soft magnetic green compact comprises a magnetic powder including an iron system powder, a mixed powder including a resin powder, and a green compact formed by compressingly molding the magnetic powder and the resin powder in a mold by a powder metallurgic method, the green compact applied with thermal treatment, and the resin powder including a lubrication function and a binding function. (*See* present specification at paragraph [0013] and present claims 10 and 11). A composition amount of the resin powder is 0.10-3.00 weight percent relative to the total weight before the molding and is 0.01-0.50 weight percent relative to the total weight after the molding and the thermal treatment. (*See* Id.). The resin powder includes a polyamide system resin and a thermoplastic resin having a melting point equal to or higher than 200°C. (*See* present specification at paragraph [0015] and present claim 13). A soft magnetic green compact of the present invention achieves high strength under the high temperature conditions, ejects easily from a mold, and contains balanced magnetic and electric properties. (*See* present specification at paragraphs [0009] and [0086]).

Rejection under 35 U.S.C. §103(a)

The rejection of claims 10-16 under 35 U.S.C. §103(a) as obvious over U.S. Patent No.6,641,919 ("Hayashi") in view of U.S. Patent No. 5,350,558 ("Kawato") is respectfully traversed.

Hayashi does not describe or suggest the claimed amount of a resin powder that is 0.10-3.00 weight percent relative to the total weight before molding and is 0.01-0.50 weight percent relative to the total weight after molding and thermal treatment, *or* the claimed polyamide system resin and a thermoplastic resin combination, as described above.

Hayashi generally describes a resin-bonded magnet. The resin-bonded type magnet is a "resin-bonded type magnet formed by molding a composition comprising a magnetic powder and a resin binder in which the resin binder comprises at least one unsaturated polyester resin curing product as a main ingredient." (Column 2, lines 11-16). (Emphasis added). According to the reference, the resin-bonded type magnet is "excellent in the magnetic properties, as well as excellent in the degree of freedom for the shape, moldability and mechanical strength." (Column 1, lines 58-61). However, the reference recites that such properties are only obtained when the amount of the unsaturated polyester resin is in the range of 5 parts by weight to 50 parts by weight, based on 100 parts by weight of the magnetic powder. In particular, the reference recites that:

> the unsaturated polyester resin binder described above is added by the addition amount in excess of 5 parts by weight and less than 50 parts by weight in a state including each of the constituent ingredients based on 100 parts by weight of the magnetic powder . . . **If the addition amount of the resin binder compound is 5 parts by weight or less based on 100 parts by weight of the magnetic powder, the strength of the molding product is lowered and the fluidity during molding is lowered remarkably, so that the effect of this invention can not be obtained. Further, when it is 50 parts by weight or more, no desired magnetic properties are obtainable**.

(Column 6, lines 39-51). (Emphasis added). Therefore, Applicants' ranges of 0.10-3.00 weight percent and 0.01-0.50 weight percent in present claims 10 and 11 are clearly not described or suggested by the reference.

Moreover, as shown above, the reference only describes "at least one unsaturated polyester resin" as the *main* component in the binder. There is no disclosure whatsoever of a the polyamide system resin and thermoplastic resin combination of present claim 13, or any evidence that such a resin combination would be effective for the disclosed resin-bonded magnet. In fact, as demonstrated in Comparative Examples 3, 4, and 7 of the reference, in which Nylon 12 (a polyamide) was used, the magnetic properties were lowered. (*See* Tables

4 and 6 of columns 11 and 13 of the reference). Applicants note that Example 13 in Table 6 shows a composition with Nylon 12; however, the composition does not include the additional thermoplastic resin. Therefore, Applicants' claimed invention is not obvious in view of Hayashi.

Kawato does not cure the deficiencies of Hayashi.

Kawato generally describes a magnetic powder and a method of preparing a resin-bonded type magnet prepared by molding magnetic composition. The reference also describes a polymeric binder that is coated on or adhered to the magnetic powder. (*See* column 4, lines 9-12 of the reference). In particular, the "magnetic powder material (A) . . . comprises 99.5 to 60% by volume (99.9 to 85% by weight) of magnetic powder and 0.5 to 40% by volume (0.1 to 15% by weight) of the . . . polymer." (Column 5, lines 2-7) (Emphasis added). However, the polymer used in the binder is a "**polycyanoaryl ether**", which is clearly not an unsaturated *polyester*, as described for the binder of Hayashi. (Column 4, line 44-65 and column 5, lines 62-66). (Emphasis added). As the Office has not shown any evidence or suggestion that one would selectively substitute the main component of the binder of Hayashi and lower the amount of the polymer, Kawato does not remedy the deficiencies of Hayashi. Moreover, the disclosure of Kawato does not indicate whatsoever the additional use of a polyamide resin system for the binder. Therefore, the claimed invention is not obvious in view of the combination of the references.

In contrast to these references, the soft magnetic green compact and soft magnetic powder material of the present invention includes resin powder that is 0.10-3.00 weight percent relative to the total weight before forming and the composition amount of the resin powder is 0.01-0.50 weight percent relative to the total weight after forming and thermal treatment. According to the present specification,

> because the melting point of the resin is lower than the melting point of the iron system powder, the high temperature strength

> including larger amount of the resin is declined when the soft magnetic green compact is used. Thus, by reducing the resin by the thermal treatment, the high temperature strength of the soft magnetic green compact is ensured.

(Paragraph [0035] of the present specification). Moreover, as "the total resin amount is reduced, the magnetic characteristics are improved because the relative ratio of the iron system powder particle is increased." (Paragraph [0036] of the present specification). Further, regarding combined use of the polyamide, the specification discloses that polyamide system resin helps to "strike a balance between the magnetic characteristics such as the magnetic permeability and the saturation magnetic flux density and the electric characteristics such as resistivity." (Paragraph [0034] of the present specification).

However, Hayashi and Kawato, as discussed above, do not describe the presently claimed amounts of the resin, the combined use of the polyamide system resin, or even suggest any relationship between the amounts of resin before and after forming. As such, the rejection over these references is believed to be improper.

Therefore, Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. § 103(a).

New Claims 18-23

New claims 18-23 are also unobvious over the cited references of record.

In particular, in the present invention, the powder particles of the magnetic powder are bound to each other by oxidization. It is necessary to perform the heat treatment with an oxidizing ambient temperature for binding the powder particles with each other by oxidization. Furthermore, the composition amount of the resin powder is restricted to 0.01-0.50 weight percent relative to the total weight after the molding and the thermal treatment. (*See*, e.g., paragraph [0058] of the present specification). According to the present invention, high strength under high temperature condition of the soft magnetic green compact is achieved, since the binding with oxidization of the magnetic powders is stronger than the

binding of the resin powder. (*See*, e.g., paragraphs [0045] and [0056] of the present specification). Furthermore, when the heat treatment is performed with an oxidizing ambient, the composition amount of the resin is reduced. (*See*, e.g., paragraphs [0055] and [0081] of the present specification). Thus, the high strength under high temperature condition of the soft magnetic green compact is achieved. Furthermore, in the present invention, high resistivity of the soft magnetic green compact by binding the magnetic powders by oxidization is achieved. In the soft magnetic green compact, it is important to achieve high resistivity.

Hayashi, discussed above, discloses a resin-bonded type magnet preparing by molding a composition comprising a magnetic powder and resin binder by using the thermosetting resin molding machine. (*See*, e.g., Summary of the Invention, at columns 1-2). That is, the reference discloses a method for molding, in which there is binding of the magnetic powder and the resin binder together. Thus, the reference does not disclose the green compact molded by binding the particles of the magnetic powder with each other by oxidization. In particular, the reference discloses a resin-bonded type magnet and does not disclose the heat treatment with an oxidizing ambient. Furthermore, one would not perform the heat treatment with an oxidizing ambient when they produce the resin-bonded type magnet, since the heat treatment under the oxidizing ambient deteriorates the magnetic property of the resin-bonded type magnet.

Kawato, discussed above, discloses a method of molding the magnetic powder coated by resin. (*See*, e.g., Summary of the Invention, at columns 4-5). Thus, the particles or the magnetic powder are bound to each other by resin. As a result, the reference does not disclose that the magnetic powders are bound by oxidization. According to the reference, the strength of the magnetic compact is maintained by binding between the resins. Thus, high strength under high temperature is not achieved.

Therefore, since the references disclose that the magnetic powders are bound by the resin and do not disclose that the magnetic powders are bound by oxidization, the claims are not obvious over the combined references.

Double Patenting Rejection

Applicants respectfully request that the provisional double patenting rejection of claims 10-16 over claims 1-3, 5, 8-11 and 16-19 of copending Application No. 10/321,377 be held in abeyance until allowable subject matter is indicated.

Information Disclosure Statement

Applicants thank the Examiner for signing the PTO Form 1449, filed with the Information Disclosure Statement on December 12, 2003. However, Applicants note that the Examiner did not acknowledge consideration of any of the foreign references recited on the form. Accordingly, Applicants kindly request that the Examiner initial next to each of the foreign references, and forward the form to Applicant's representative with the mailing of the next Office Communication.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, he is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

Respectfully submitted,

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